

ABSTRACT

Two novel phosphorylation sites of myosin light chain 1 (MLC1) are described. Methods of monitoring phosphorylation of MLC1 to identify new cardiac and skeletal muscle protective agents, monitor the extent of preconditioning of cardiac and skeletal muscles, and monitoring the status of a subject with cardiac or skeletal muscle damage are provided. Also provided are methods and compositions for altering MLC1 to change contractility of cardiac and skeletal muscles and to protecting cardiac and skeletal muscles from damage caused by conditions and/or agents including, but not limited to, cardiomyopathies, hypertension, free radicals ischemia, hypoxia, and ischemia/hypoxia with reperfusion.